Physics P2.2 Energy

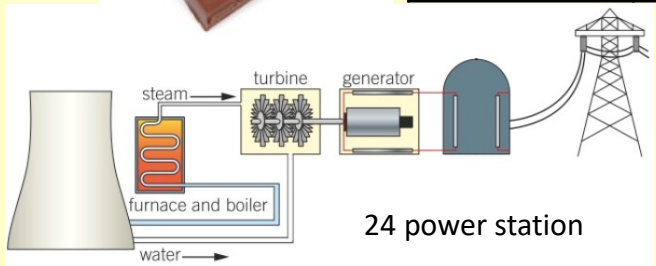
Section 1	Energy basics
1 Energy	Measured in joules (J). Often written in kilojoules (kJ)
2 Food	Energy store which we need to take in to our bodies. We need different amounts of energy to do different activities.
3 Fuel	Energy store which we need to heat houses or make transport work.

Section 2	Energy stores
Energy to do with…	Type of store
4 Food, fuels, batteries	**Chemical**
5 Hot objects	**Thermal**
6 Moving objects	**Kinetic**
7 Position in a gravitational field	**Gravitational potential**
8 Changing shape, stretching or squashing	**Elastic**

Section 3	Transferring energy
9 Law of conservation of energy	Energy cannot be created or destroyed, it can only be stored or transferred.
10 Method of transferring energy	Electric current, light & sound
11 Wasted energy	Energy which is transferred into a store you do not want
12 Thermal store of the surroundings	Common wasted energy transfer, energy described as dissipated

Section 4	Energy and temperature
13 Temperature	Measured in degrees Celsius (or Kelvin). Measure of the energy store in an object.
14 Energy in particles	All particles have energy, and are moving. As you heat them, they move faster.
15 Increasing temperature	Increasing the temperature of an object depends on its mass, what it is made of and the temperature rise you want
16 Energy transfer	Energy is transferred from hot objects to cooler objects until there is no temperature difference and they are in equilibrium.

3 Fuels



24 power station

Section 5	Thermal energy transfer
17 Conduction	Happens in solids. Particles gain energy and vibrate faster. They collide with adjoining particles and pass on the energy. Happens well in metals because they have free electrons.
18 Convection	Happens in fluids. Particles gain energy and move apart. They become less dense and rise. This sets up a convection current.
19 Radiation	Very hot objects give out infrared radiation. This travels as waves. It can travel through a vacuum. The radiation can be reflected, absorbed or transmitted.

Oasis

Science

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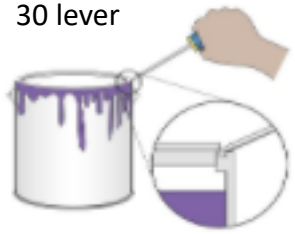
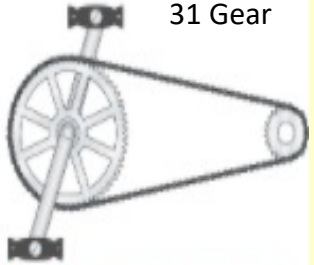
Section 6	Generating energy
20 Fossil fuels	Non-renewable fuels coal, gas and oil. Made from the remains of sea creatures and plants.
21 Fossil fuel power station	Fuels are burned and the energy is used to boil water. The steam produced turns a turbine attached to a generator.
22 Renewable energy	Energy sources which will not run out, such as wind, solar, tidal, geothermal, wave, biomass and hydrothermal.

Section 7	Power
23 Power	The amount of energy transferred by a device per second. Measured in Watts.
24 Kilowatt hours	Energy used – the power of a device and how long you have used it for. This is what you are charged for on your power bill.

30 lever



31 Gear



Section 8	Work, energy and machines
25 Work	The energy required to exert a force over a distance.
26 Lever	A simple machine which multiplies the force you are exerting by making the distance larger.
27 Gear	A simple machine which multiplies the force being exerted using different sized cogs.